

Cometary Observations at the Liverpool Observatory, 1896. By W. E. Plummer, M.A.

This paper is practically a continuation of that given in the June number of the *Monthly Notices* of last year, and the remarks there made apply equally to the observations here given. The instrument and the micrometers employed, as well as the method of reduction pursued, are precisely the same as those mentioned in the earlier paper. The abbreviations given in the column headed 'No. of Comparisons' are also explained in that place. The comets have mostly been faint objects, and the use of the filar micrometer has generally been impossible. In the case of Swift's Comet of last April the approximate sub-polo position did not permit the instrument to be reversed, so that any error in the orientation of the micrometer has a very injurious effect. On some occasions portions of the object-glass were cut off by the mounting of the instrument.

Comet 1896 I. (Perrine-Lamp).

Greenwich Mean Time of Observation.	h	m	s	No. of Comparisons (a)	Apparent R.A. of Comet.	Declina- tion.	No. of Comparisons (b)	Appar- ent Deci- nation of Comet.	Log. Factor of Parallax in (a)	Log. Factor of Parallax in (b)	Letter of Ref- er- ence.		
1896 Feb. 22	16	22	57.2	+	52°15'	25	21 0 57.8	+ 3 18.7	5	+ 27 56 42.6	- 9 59.45	o.8245	
	22	16	22	57.2	+ 2 35.28	25	21 0 57.65	+ 2 11.3	5	+ 27 56 43.2	- 9 59.45	o.8245	
	23	16	30	16.0	+ 2 1.89	25	21 22 10.50	+ 4 23.9	5	+ 32 34 48.7	- 9.6112	o.8179	
Mar. 1	7	26	45.4	- 2 34.08	Ret.	0 18 6.84	+ 8 10.7	Ret.	+ 50 50 35.2	+ 9.7448	o.6072	d	
	1	7	26	45.4	- 1 35.90	,"	0 18 5.31	- 9 12.1	,"	+ 50 50 37.0	+ 9.7448	o.6072	e
3	9	0	34.6	+ 1 24.00	20	1 5 44.60	+ 10 9.7	5	+ 51 44 54.4	+ 9.7515	o.6934	f	
4	10	40	10.0	- 1 36.46	15	1 26 41.36	+ 7 13.8	4	+ 51 44 43.0	+ 9.6995	o.8034	g	
4	10	40	10.0	- 2 24.66	15	1 26 41.85	+ 6 29.1	4	+ 51 44 37.7	+ 9.6995	o.8034	h	
a	9	9	16	3.7	- 1 15.68	Ret.	2 35 13.59	+ 4 0.3	Ret.	+ 50 0 48.7	+ 9.7387	o.6192	i
	9	9	16	3.7	- 20.87	,"	2 35 13.67	- 38.0	,"	+ 50 0 48.3	+ 9.7387	o.6192	j

Greenwich Mean Time of Observation.	h m s	No. of Comparisons (a)	Apparent R.A. of Comet.	Declina- tion (δ)	No. of Comparisons (δ)	Apparent Declination of Comet.	Log. Factor of Parallax in (δ)	Letter of Refer- ence,
<i>1896 Mar. 11</i>								
	9 10 50.2	+ 2 8.19	Ret.	2 53 24.72	- 4 49.6	Ret.	+ 49 4 42.6	+ 9.7259
11	9 10 50.2	+ 1 39.94	"	2 53 24.80	- 1 0.1	"	+ 49 4 40.9	+ 9.7259
16	9 28 42.5	- 1 22.62	"	3 25 34.97	- 1 54.0	"	+ 46 53 52.4	+ 9.7091
19	10 2 11.3	+ 1 44.57	"	3 39 8.15	+ 25.0	"	+ 45 46 55.9	+ 9.7038
21	8 53 11.4	- 18.06	"	3 46 24.60	- 3 54.2	"	+ 45 8 30.7	+ 9.6801
<i>Comet 1896 III. (Swift).</i>								
Apr. 21	9 1 13.7	+ 1 51.18	Ret.	3 32 53.80	+ 9 24.9	Ret.	+ 30 56 7.2	+ 9.5886
22	8 53 30.0	- 1 31.92	25	3 30 48.03	+ 3 50.5	5	+ 33 34 59.8	+ 9.6023
23	9 10 5.2	+ 3 12.32	20	3 28 19.37	+ 5 12.8	5	+ 36 13 4.9	+ 9.5986
24	9 14 16.1	+ 1 10.11	25	3 25 30.73	- 2 1.1	6	+ 38 45 39.0	+ 9.6033
24	9 14 16.1	- 1 41.94	25	3 25 30.69	- 11 52.1	6	+ 38 45 37.6	+ 9.6033
28	9 26 35.3	+ 1 21.05	25	3 10 42.01	+ 3 4.1	5	+ 47 56 58.5	+ 9.6166
28	9 26 35.3	+ 1 4.95	25	3 10 41.99	+ 12 8.7	5	+ 47 56 59.3	+ 9.6166
29	10 3 52.9	+ 16.44	Ret.	3 6 1.95	- 3 32.0	Ret.	+ 50 0 34.4	+ 9.5497
29	10 3 52.9	- 38.57	"	3 6 2.17	+ 0 58.8	"	+ 50 0 32.5	+ 9.5497
May 1	10 16 40.0	- 3 47.83	19	2 55 57.82	- 2 33.8	4	+ 53 40 14.3	+ 9.5066
1	10 16 40.0	- 3 54.00	19	2 55 57.92	- 2 29.4	4	+ 53 40 11.2	+ 9.5066
3	11 9 37.1	- 1 46.69	25	2 44 35.29	- 51.5	5	+ 56 53 42.5	+ 9.2079
3	11 9 37.1	- 11.91	25	2 44 35.26	+ 3 54.2	5	+ 56 53 40.9	+ 9.2079
4	10 13 30.4	+ 6 26.26	Ret.	2 38 50.70	+ 2 37.3	Ret.	+ 58 15 22.5	+ 9.5395
								+ 8.792

May 1897. at the Liverpool Observatory.

553

Greenwich Mean Time of Observation.	No. of Comparisons (a)	Apparent R.A. of Comet.	Declination of Comet.	Apparent Declination of Comet.			No. of Comparisons (b)	Log. Factor of Parallax in (a)	Letter of Ref- er- ence.
				h	m	s			
1896 May 4	10 13 30.4	-1 42.83	Ret.	2 38 51.06	- 8 26.3	Ret.	+ 58 15 25.7	+ 9.5395	o.8792 o
5	10 29 59.7	+ 2 58.80	20	2 32 35.70	- 3 28.4	5	+ 59 34 44.0	+ 9.3652	o.8966 p
6	9 49 50.5	-1 15.42	"	2 26 24.38	+ 6 10.7	"	+ 60 45 23.1	+ 9.5149	o.8789 q
6	9 49 50.5	-1 31.87	"	2 26 25.02	- 1 33.2	"	+ 60 45 25.7	+ 9.5149	o.8789 r
7	11 0 11.2	+ 2 33.90	25, Ret.	2 19 32.24	- 4 41.1	5, Ret.	+ 61 55 28.7	+ 8.9375	o.9095 u
7	11 0 11.2	- 51.53	"	2 19 31.57	+ 10 23.1	"	+ 61 55 27.2	+ 8.9375	o.9095 t
8	10 36 40.3	+ 17.02	Ret.	2 12 56.64	+ 3 32.1	Ret.	+ 62 55 58.0	+ 9.1248	o.8955 n
8	10 36 40.3	+ 4 50.34	"	2 12 56.39	+ 10 51.0	"	+ 62 55 57.1	+ 9.1248	o.8955 v
9	10 20 32.2	-4 33.35	"	2 6 10.97	- 4 43.5	"	+ 63 51 55.0	+ 9.1943	o.8904 w
9	10 20 32.2	-6 1.21	"	2 6 10.72	+ 23.0	"	+ 63 51 52.5	+ 9.1943	o.8904 x
10	10 44 0.1	-1 44.39	"	1 59 7.07	+ 12 4.9	"	+ 64 44 40.4	+ 8.6180	o.8916 y
10	10 44 0.1	+ 2 16.94	"	1 59 6.13	+ 8 2.51	"	+ 64 44 42.0	+ 8.6180	o.8916 z
11	11 3 50.0	+ 5 36.34	"	1 51 58.34	- 6 59.3	"	+ 65 33 6.2	- 8.8789	o.8877 aa
12	11 56 29.4	+ 3 15.69	"	1 44 36.87	+ 2 0.5	"	+ 66 57 34.0	- 9.4995	o.8668 bb
12	11 56 29.4	- 8.83	"	1 44 37.15	+ 4 44.6	"	+ 66 18 4.5	- 9.4995	o.8668 cc
13	11 45 16.3	-2 46.73	"	1 37 29.41	+ 16 25.1	"	+ 66 57 34.0	- 9.5108	o.8637 dd
16	10 40 26.0	+ 3 18.19	"	1 16 6.95	+ 3 43.1	"	+ 68 36 50.2	- 9.3416	o.8677 ee
19	11 2 3.1	-0 21.09	"	0 54 17.60	- 2 47.0	"	+ 69 54 48.3	- 9.6976	o.8360 ff
19	11 2 3.1	+ 2 57.48	"	0 54 16.92	- 1 11.0	"	+ 69 54 47.0	- 9.6976	o.8360 gg
June 2	11 35 50.4	+ 0 15.98	"	23 16 8.89	- 1 12.7	"	+ 72 42 47.1	- 0.0568	o.5591 hh

ss 2

Comet I. 1897 (Perrine, 1896 November 2).

Greenwich Mean Time of Observation.	h m s	No. of Comparisons (a)	Apparent R.A. of Comet.	Declina- tion.	No. of Comparisons (δ)	Apparent Declination of Comet.		Log. Factor of Parallax in (a)	Letter of Refer- ence.
						h m s	"	°	
1896 Nov. 5	7 42 30.3	+0 12.42	Ret.	20 17 9.61	- 9 49.0	+23	2 4.6	+9.3254	a
5	7 42 30.3	-1 35.89	"	20 17 9.36	+ 7 47.6	,"	+23 2 2.5	+9.3254	b
8	6 49 50.0	-0 16.81	"	20 12 33.87	+ 3 28.7	,"	+20 41 26.2	+9.1968	c
13	7 50 10.2	-0 40.93	25	20 6 9.27	+ 7 5.9	5	+16 57 55.8	+9.4260	d
26	6 0 36.4	-0 7.94	20	19 55 42.57	+ 6 37.3	4	+ 8 53 27.0	+9.3035	e
26	6 0 36.4	+1 31.52	20	19 55 42.39	- 7 30.4	4	+ 8 53 24.9	+9.3035	f
29	6 26 39.2	+0 35.34	Ret.	19 54 10.58	+ 2 33.6	Ret.	+ 7 16 47.2	+9.3939	g
30	6 22 14.9	-1 13.21	"	19 53 43.52	+ 6 20.4	,"	+ 6 45 59.7	+9.3939	h
30	6 22 14.9	-1 8.82	"	19 53 43.40	-10 1.7	,"	+ 6 46 4.2	+9.3934	i

Notes

February 22.—Comet tolerably bright, but the selection of definite point for observation difficult. February 23.—The comet seemed much fainter, and the separate measures are very discordant. March 1.—Interruptions from clouds. The stars of comparison too far away in declination; the right ascension very uncertain. March 4.—Observation unsatisfactory; an attempt to repeat the observation with the reticle micrometer failed on account of clouds. March 21.—Comet v. ft.; observation doubtful.

April 21.—Comet tolerably bright, especially towards the south-east, which is the point selected for observation. April 28.—Comet well seen, notwithstanding bright moonlight. May 1.—Comet appears much fainter; the sky rather light, though the Moon had not risen. May 7.—Observation very unsatisfactory with either micrometer; the mean of the whole of the measures is given. May 9.—Interrupted by clouds. May 13.—Comet exceedingly faint; further observation probably impossible. May 16.—Brightness much the same as on May 13; comet just visible; no alteration noticeable. June 2.—Some of the measures rejected evidently had no reference to the comet, which could only be seen at intervals by glimpses.

Nov. 5.—Comet very faint and difficult to pick up; separate measures discordant. Nov. 8.—Only three observations possible on account of cloud. Nov. 26.—Comet very faint, but central stellar condensation suspected.